February 2003

Background | Oil | Natural Gas | Electricity | Profile | Links

Iraq

Iraq holds more than 112 billion barrels of oil - the world's second largest proven reserves. Iraq also contains 110 trillion cubic feet of natural gas, and is a focal point for regional and international security issues.

Note: The information contained in this report is the best available as of February 2003 and can change. Also, please click here for a complete chronology of events pertaining to Iraq from 1980 through mid-February 2003.

GENERAL BACKGROUND

During the 1980s and 1990s, Iraq experienced two major wars (Iran-Iraq and the Kuwait war), plus more than a decade of economic sanctions. As a result, the country's economy, infrastructure, and society have deteriorated significantly. Iraq's gross domestic product (GDP) has fallen sharply since before the Iraqi invasion of Kuwait, with per-capita income and living standards far below pre-war levels. On the other hand, increased oil production since 1996 and higher oil prices since 1998 resulted in estimated Iraqi real GDP growth of 12% in 1999 and 11% in 2000. For 2001, with net oil exports relatively flat and oil prices down from 2000, Iraq's real GDP was estimated to have grown by only 3.2%. For 2002, with higher oil prices but lower net oil exports, Iraq's real GDP appears to have remained roughly flat. Iraqi inflation currently is estimated at around 25% (down slightly from 28% in 2001), with unemployment (and underemployment) high as well. Iraq's merchandise trade surplus is about $5.2 billion, although much of this is under United Nations (U.N.) control. Iraq has a heavy debt burden, possibly as high as $200 billion (or more) if debts to Gulf states and Russia are included. Iraq also has no meaningful taxation system, plus erratic fiscal and monetary policies.

On May 14, 2002, the U.N. Security Council approved a change in the "oil-for-food" program for Iraq that makes use of an extensive list of "dual-use"

goods (goods that could have a military as well as civilian use). Under the modification, Iraq is able to use its oil revenues, which go into a U.N. escrow account out of which suppliers exporting products to Baghdad are paid, in order to purchase items not on the list.

Over the past few years, Iraq has been attempting to improve relations with various Arab (and non-Arab) countries. In March 2002, for instance, at an Arab summit meeting in Beirut, Iraq pledged"non-interference" in Kuwait's internal affairs and recognition of Kuwait's borders. Iraqi Foreign Minister Naji Sabri stated, "We are for the prosperity and independence of the state of Kuwait and also for the normalization of ties, diplomatic, economic, political." In January 2001, Iraq signed free-trade deals with Egypt and Syria, and in August 2001, Syria's Prime Minister visited Baghdad. In April 2001, Iraqi Vice President Taha Hussein Ramadan met Russian President Vladimir Putin, the highest-level Iraqi-Russian contact in several years.

In June 2001, however, in an apparent blow to Iraqi-Saudi relations, Saudi Arabia announced that it had seized ownership of the 1.6-million-barrel-per-day IPSA pipeline that had carried Iraqi crude oil to the Saudi Red Sea port of Yanbu (Mu'jiz) prior to Iraq's invasion of Kuwait. The seizure included pumping stations, storage tanks, and the maritime terminal. Saudi Arabia claimed that the pipeline was confiscated as a result of aggressive Iraqi actions. Iraq insisted that it still owned the pipeline, and in May 2002, stated that the line was "ready for export."

Since the end of the Gulf War in 1991, the United States and the United Kingdom have maintained "no-fly zones" over Iraq, and also have carried out occasional bombing of anti-aircraft and other targets. U.N. weapons inspectors left Iraq in December 1998, and the United States responded at the time with a several-day bombing campaign of Iraq, called "Operation Desert Fox." On October 16, 2002, President Bush signed a resolution by the U.S. Congress authorizing him to use force against Iraq if necessary.

On November 8, 2002, the U.N. Security Council unanimously adopted

Resolution 1441, demanding that Iraq give U.N. inspectors the unconditional right to search anywhere in Iraq for banned weapons. Iraq was also required to make an "accurate full and complete" declaration of its nuclear, chemical, biological and ballistic weapons and related materials used in civilian industries within 30 days. The resolution required violations to be reported back to the Security Council by inspectors before any actions could be taken against Iraq for violating weapons bans.

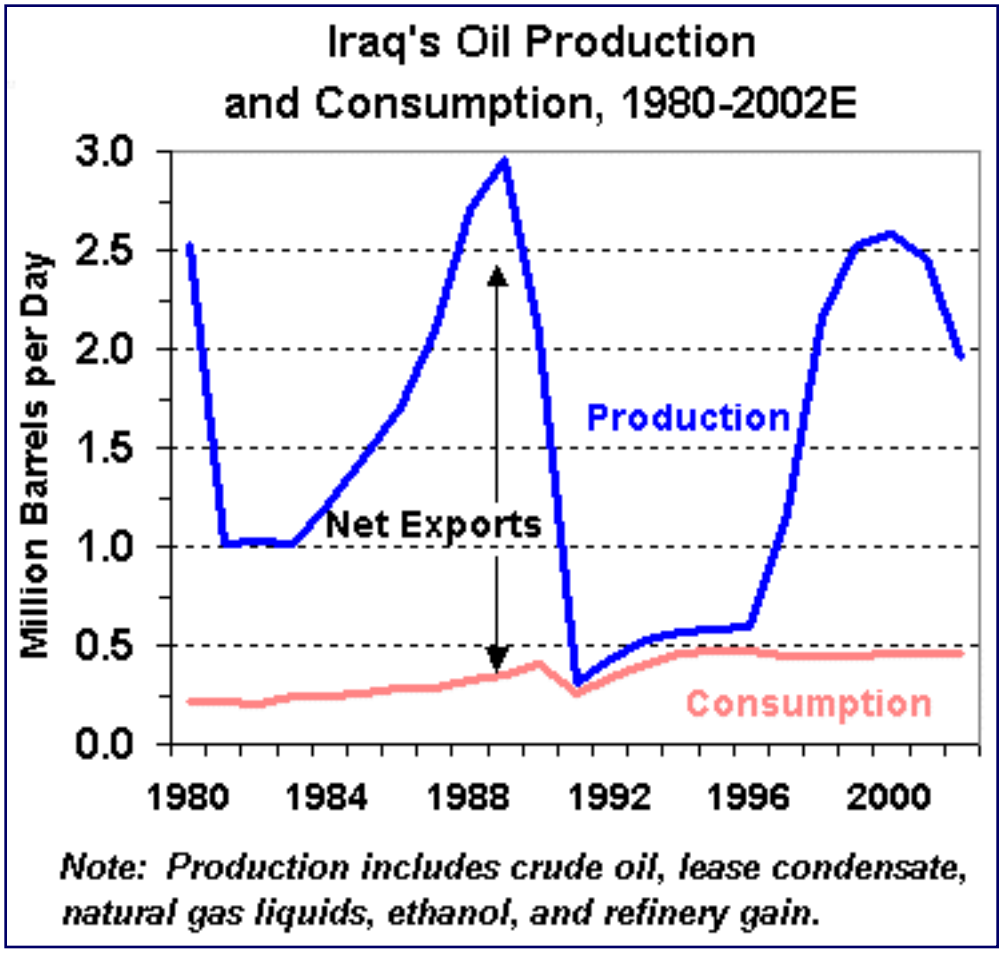
OIL

Iraq contains 112 billion barrels of proven oil reserves, the second largest in the world (behind Saudi Arabia). Iraq's true resource potential may be far greater than this, however, as the country is largely (90% or so) unexplored due to years of war and sanctions. Deep oil-bearing formations located mainly in the vast Western Desert region, for instance, could yield large additional oil resources (possibly another 100 billion barrels), but have not been explored. Iraq's oil production costs are amongst the lowest in the world, making it a highly attractive oil prospect. However, only 15 of 73 discovered fields have been developed, while few deep wells have been drilled compared to Iraq's neighbors. Overall, only about 2,000 wells reportedly have been drilled in Iraq, compared to around 1 million wells in Texas for instance.

It is important to note that Iraq generally has not had access to the latest, state-of-the-art oil industry technology (i.e., 3D seismic), sufficient spare parts, and investment in general throughout most of the 1990s, but has instead reportedly been utilizing questionable engineering techniques (i.e., overpumping, water injection/"flooding") and old technology to maintain production. There is also some evidence that Iraq may have damaged its oil reservoirs through use of such techniques and through lack of sufficient investment over a lengthy period of time. Iraq's former Oil Minister, Amir Rashid (replaced in January 2003 by Samir Abdul Aziz al-Najm), indicated in early 2002 that only 24 of 73 Iraqi oil fields were producing. Oil consulting firm Saybolt International, for instance, has pointed out the risk of a 5%-15% annual decline in production capacity at (possibly) damaged Iraqi oil fields.

Iraqi oil reserves vary widely in quality, with API gravities in the 24º to 42º range. Iraq's main export crudes come from the country's two largest active fields: Rumaila and Kirkuk. The southern Rumaila field, which extends a short distance into Kuwaiti territory, produces three streams: Basra Regular; Basra Medium (normally 30º API, 2.6% sulfur); and Basra Heavy (normally 22º-24º API, 3.4% sulfur). Basrah Blend normally averages around 32º API, 1.95% sulfur, but reportedly is worse currently at around 29-30º API and 2%+ sulfur content. The northern Kirkuk field, first discovered in 1927, normally produces 35º API, 1.97% sulfur crude, although the API gravity and sulfur content both are reported to have deteriorated sharply in recent months. Kirkuk's gravity, for instance, has declined to around 32-33º API, while sulfur content has risen above 2%. Declining crude oil qualities -- and an increased "water cut" as well -- could be the result of overpumping as Iraq attempts to sell as much oil as possible. An additional export crude, known as "Fao Blend," is heavier and more sour, with a 27º API and 2.9% sulfur.

Iraq's proven oil reserves are not distributed evenly throughout the country. In fact, prior to Iraq's invasion of Kuwait in 1990, about two-thirds of Iraq's production was coming out of the southern fields of Rumaila, Zubair, and Bin Umar. Other potentially huge fields such as Majnoon and West Qurna (see below for more details) are also located in the southern part of the country. Notably, southern Iraq is populated overwhelmingly by Shi'ite Muslims, who make up the majority of Iraq's population but have little power -- Saddam Hussein is a Sunni Muslim from the central Iraqi town of Tikrit -- and who rebelled against Saddam Hussein following the 1991 Gulf War. Although much of Iraq's southern oil infrastructure -- fields, refineries, storage facilities, transportation infrastructure -- was damaged during the Gulf war, the oil potential of this region alone is huge.



To help attract foreign investment to the country's energy sector, Iraq's oil ministry has introduced amendments to existing development and production contracts (DPCs). Among other things, the duration of DPCs has been reduced from 23 to 12 years. In addition, Iraq has added a clause referring to "an explicit commitment to achieve target production within a set period."

Production

Following Iraq's invasion of Kuwait and the embargo on Iraqi oil exports, Iraqi oil production fell to around 300,000 barrels per day (bbl/d) (from 3.5 million bbl/d in July 1990). For the first 11 months of 2002, Iraqi crude oil production averaged 2.02 million bbl/d, down from about 2.45 million bbl/d in 2001 (and 2.69 million bbl/d in 2000), with large weekly and monthly fluctuations. Iraqi monthly oil output was lowest in April 2002, at 1.2 million bbl/d, and highest in February 2002, at 2.5 million bbl/d. Iraqi officials had hoped to increase the country's oil production capacity to 3.5 million bbl/d by the end of 2000, but did not accomplish this given technical problems with Iraqi oil fields, pipelines, and other oil infrastructure. Iraq also claims that oil production capacity expansion has been constrained by refusal of the United Nations to provide Iraq with all the oil industry equipment it has requested.

Oil industry experts generally assess Iraq's *sustainable* production capacity at no higher than about 2.8-2.9 million bbl/d, with net export potential of around

2.3-2.5 million bbl/d (including smuggled oil). In July 2002, then-Iraqi Oil Minister Amer Rashid said that Iraq's sustainable capacity was 3.2-3.3 million bbl/d, and that the country hoped to increase that to 3.5 million bbl/d -- even without help from foreign oil companies.-- by the end of 2003 (Iraq last produced 3.5 million bbl/d in July 1990). According to the *Middle East Economic Survey*, Iraq also aims to limit crude oil exports under the U.N. "oil-for-food" program to around 2.2 million bbl/d, with the remaining 800,000-900,000 bbl/d going for domestic consumption, exports to neighboring Jordan (at highly preferential rates, with the latest deal signed in November 2002), and smuggling (to Syria, Turkey, etc.).

Among other challenges in maintaining, let alone increasing, oil production capacity, is Iraq's battle with "water cut" (damaging intrusion of water into oil reservoirs) especially in the south. Saybolt International has reported that Iraq has been able to increase its oil production through use of short-term techniques not generally considered acceptable in the oil industry (i.e., "water flooding," injection of refined oil products into crude reservoirs). A U.N. report in June 2001 said that Iraqi oil production capacity would fall sharply unless technical and infrastructure problems were addressed. The report estimated, for instance, that production in the Kirkuk region could fall by 50% over 12 months, to 500,000 bbl/d, and that output at South Rumaila also could be reduced sharply unless immediate actions were taken. Iraq hopes to counter this by a large-scale program to drill new wells (417 are planned, most of which are to be carried out by Russian, Chinese, Iraqi, and Romanian companies).

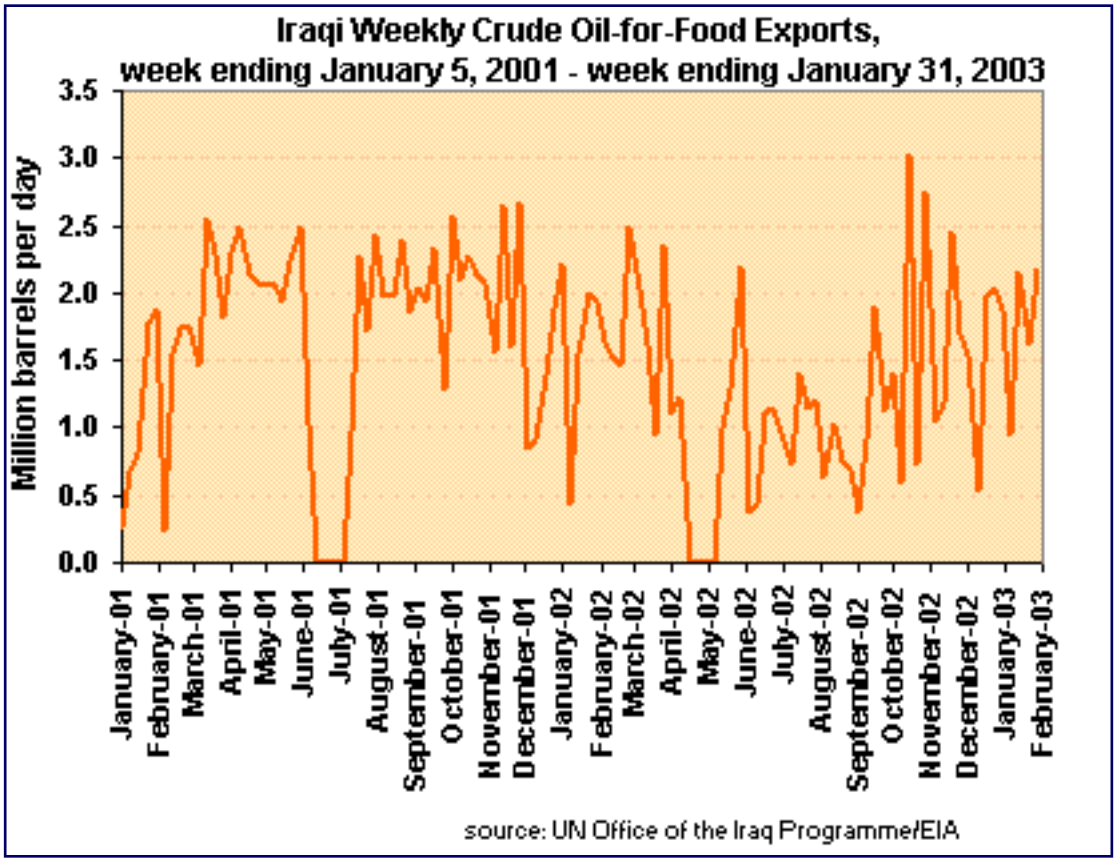
Exports

U.N. Resolution 986 (April 1995) allows Iraq to sell specified dollar amounts of crude oil over six-month periods, in part for the purchase of humanitarian supplies ("oil-for-food") for distribution in Iraq under U.N. supervision. In December 1999, with Iraq steadily increasing its oil export revenues, the Security Council voted to remove any limits on the amount of oil Iraq could export. Under the Phase XII renewal which ended November 25, 2002, the U.N. Security Council makes use of an extensive list of "dual-use" items

(goods that could have military as well as civilian use). Iraq is allowed to make use of "oil-for-food" revenues to purchase items not on the list. The current 6-month phase (Phase XIII) began on December 4, 2002 after a two-week delay over the goods review list issue. Official "oil-for-food" exports from Iraq were about 1.55 million bbl/d in December 2002 and 1.79 million bbl/d in January 2003.

Overall, about three-fourths of the proceeds from "oil-for-food" sales are used to purchase humanitarian goods for Iraq, while 25% are earmarked for reparations to Gulf War victims, pipeline transit fees for Turkey (which claims that the embargo on Iraq has cost Turkey more than $35 billion since 1990), and funding for U.N. weapons monitoring activities. On September 26, 2002, the head of the U.N. Iraq Program, Benon Sevan, reported to the U.N. Security Council that the "oil-for-food" program was running a large shortfall (around $10 billion total, including $2 billion in the current phase), making it "impossible to implement the humanitarian program effectively." According to Sevan, over 1,200 contracts worth more than $2 billion that had been approved by the U.N. could not be carried out due to a lack of funds.

During 2001, Iraq averaged official (i.e., U.N. monitored) net oil exports of around 2 million bbl/d, although this number fluctuated greatly through the year, and fell sharply during the first part of 2002 (to under 1.5 million bbl/d during the first 9 months of the year; see graph). The reduced volume of Iraqi exports in much of 2002 appears to have been a result of at least two main factors: 1) Iraq's unilateral one-month embargo of oil exports in April 2002 ostensibly in support of the Palestinians; and 2) pressure by the United States and other countries to clamp down on Iraq's practice of charging an illegal "surcharge" on their U.N. -authorized oil exports (see below for more on this subject). Since mid-December 2002, however, Iraq has increased its production and exports sharply, with production reportedly reaching 2.6 million bbl/d bbl/d, "oil-for-food" exports at 1.8 million bbl/d, and illegal exports at around 400,000 bbl/d.



Besides the 100,000 bbl/d or so going to Jordan legally (i.e., with tacit U.N. permission, and under a protocol between Iraq and Jordan), and the 460,000 bbl/d or so consumed domestically, the rest (not counting illegally smuggled oil and oil products) was exported either through the Iraq-Turkey pipeline or the Persian Gulf port of Mina al-Bakr. Although U.N. Resolution 986 mandates that at least half of the "oil-for-food" exports must transit through Turkey, it appears that during several months of 2002, more Iraqi oil was being exported via Mina al-Bakr rather than via the Ceyhan terminal in Turkey, in part due to a shift in oil exports away from Europe and the United States and towards Asia due in part to the U.N. 's "retroactive pricing" plan (see below for more details). In general, Mina al-Bakr is used for Iraqi oil exports to Asia, while Ceyhan is used for Europe.

An estimated 30%-40% of Iraqi oil is sold initially to Russian firms (i.e., Emerkom, Kalymneftegas, Machinoimport, Rosnefteimpex, Sidanco, Slavneft, Soyuzneftegaz, Tatneft, and Zarubzhneft). The remaining 60%-70% of Iraq's oil is first purchased by companies from many countries, including Cyprus, Sudan, Pakistan, China, Vietnam, Egypt, Italy, Ukraine, and others.

Iraqi oil is normally then resold to a variety of oil companies and middlemen before being purchased by end users. During 2001, for instance, nearly 80% of Basra Light liftings, and over 30% of Kirkuk oil, went to the United States, with large importers including ExxonMobil, Chevron, Citgo, BP, Marathon, Coastal, Valero, Koch, and Premcor. During the first eleven months of 2002, the United States imported an average of 449,000 bbl/d from Iraq. In January 2003, approximately 1.2 million bbl/d of Iraqi oil went to the Americas (up from 910,000 bbl/d in December 2002 and 515,000 bbl/d in November), while 430,000 bbl/d went to Europe and 140,000 bbl/d to Asia. To some extent, increased Iraqi oil exports to the Americas have helped fill the loss created by a major oil strike and general unrest in Venezuela beginning in December 2002.

In addition to U.N.-sanctioned oil exports to Jordan, which are currently carried by truck (plans for a 150,000-bbl/d pipeline to Jordan's Zarqa oil refinery were approved by Jordan's cabinet in December 2001, and Jordan reportedly has received more than 30 offers from firms interested in building the line -- with possible completion in 2004), there have been persistent reports that Iraq has smuggled 200,000-400,000 bbl/d of crude oil and products via a number of routes. These include: 1) to Turkey (as high as 100,000-150,000 bbl/d, mainly of fuel oil) by truck through the Habur border point (reportedly, this smuggling was stopped from September 18, 2001 through January 7, 2002); 2) to Jordan (possibly 10,000-30,000 bbl/d above domestic needs) by truck; 3) to Syria (150,000-200,000 bbl/d or more; see below for details), mainly via the Kirkuk-Banias pipeline, with smaller volumes possibly moving via a railway line from Mosul to Aleppo; 4) to Iran along the Gulf coast and via Qais Island; and 5) to Dubai with the use of small tankers sailing from Umm Qasr. Press reports have estimated that these illegal shipments may be providing Iraq with as much as $600 million-$2 billion per year in illegal revenues, while a U.S. General Accounting Office study released in May 2002 estimated that Iraq had earned $6.6 billion from oil smuggling and illegal surcharges from 1997 through 2001.

In November 2000, numerous press reports indicated that Syria and Iraq had

reopened the 552-mile-long, Kirkuk-Banias pipeline, with the Middle East Economic Digest (MEED) reporting initial deliveries of Iraqi crude oil through the line (and also possibly by rail) at around 140,000-150,000 bbl/d (capacity prior to 1982 was 300,000 bbl/d). The oil, most likely Basra Light, reportedly is being used in Syrian domestic refineries, thus freeing up more Syrian oil for export to world markets, earning Syria extra hard currency oil export revenues (and also earning Saddam Hussein significant revenues outside the U.N. "oil-for-food" program). Since Iraqi oil exports are allowed only via approved export routes, use of the Kirkuk-Banias line would represent a potentially serious breach of U.N. sanctions against Iraq. On January 23, 2001, the Bush administration offered to allow Iraqi oil exports through Syria as long as they were regulated by the U.N. "oil-for-food" program. In January 2002, the United Kingdom directly accused Syria of violating U.N. sanctions on Iraq by shipping over 100,000 bbl/d of Iraqi oil to Syria without U.N. permission. An estimated $100 million or so per month of Iraq's illegal oil export revenues are estimated to be coming from the Syria pipeline alone, with oil sold to Syria at a significant price discount off Kirkuk published prices.

In April 2000, the U.S. Navy stopped a Russian tanker, the Akademik Pustovoit, which it suspected might be smuggling Iraqi oil. The United Nations later determined that around 20% of the vessel's gasoil cargo (which Shell said it owned) was of Iraqi origin. In April 2001, an Iraqi-owned vessel -- the Zainab -- sunk off the Dubai coast, leaking over 1,000 tons of smuggled diesel oil and polluting Gulf waters and UAE beaches. At least two other ships smuggling Iraqi oil sunk during 2001 -- one off the Kuwaiti coast in October, and one in November. During 2001, Iraqi oil smuggling through Iranian waters reportedly was reduced significantly (possibly 50%), as Iran increased its efforts at stopping suspect vessels. In October 2001, the United Nations discovered that two oil shipments on the "Essex" had been "topped off" after U.N. inspectors had signed off, adding some 500,000 barrels of crude oil to the ship. The Essex was chartered by trader Trafigura, run by former employees of Marc Rich.

In late October 2001, the U.N. Sanctions Committee began imposing a so-called "retroactive pricing" mechanism (proposed by the UK and supported by the United States) to alter the way in which Iraqi oil prices are set. The United States and the UK were concerned that Iraq was using oil price fluctuations to impose a de facto surcharge on oil purchasers, and that this money was going directly to the Iraqi government outside of U.N. control. This was also part of a continuing effort by the United States, the UK, and others to stop Iraq from forcing buyers to pay a $0.30-$0.60 per barrel surcharge, paid directly to the Iraqi government. On November 16, 2000, Iraq's State Oil Marketing Organization (SOMO) had demanded that companies lifting cargoes of Iraqi crude oil begin paying a fifty cent per barrel surcharge directly to the Iraqi government (in violation of U.N. sanctions) starting on December 1, 2000.

Under "retroactive pricing," Iraqi oil exports to the United States and Europe (but not Asia) are priced based on oil market developments through the end of the period covered by a particular oil delivery contract. Thus, "official selling prices" for Iraqi crudes (Kirkuk and Basrah Light) are not known until after the oil has been loaded and sold. At this point, prices are set at a level high enough to assure that lifters have no room to pay Iraq the illegal surcharge and still make a profit. By many accounts, this effort appears to have been at least partly successful in reducing illegal surcharges, and may also have had the side effect of reducing overall Iraqi oil exports during the summer of 2002. Iraqi oil (Kirkuk and Basra Blend) bound for the United States is priced off West Texas Intermediate, while for Europe, Iraqi oil is priced off of dated Brent.

Oil Field Development, War, and Current Status

Iraq's southern oil industry was decimated in the Gulf War, with production capacity falling to 75,000 bbl/d in mid-1991. The largest producing oil field in this region is Rumaila. The war resulted in destruction of gathering centers and compression/degassing stations at Rumaila, storage facilities, the 1.6-million bbl/d (pre-war capacity) Mina al-Bakr export terminal, and pumping stations along the 1.4-million bbl/d (pre-war capacity) Iraqi Strategic (North-

South) Pipeline. Seven other sizable fields remain damaged or partially mothballed. These include Zubair, Luhais, Suba, Buzurgan, Abu Ghirab, and Fauqi. Generally speaking, oilfield development plans have been on hold since Iraq's invasion of Kuwait, with Iraqi efforts focused on maintaining production at existing fields.

The Kirkuk field, with over 10 billion barrels in remaining proven oil reserves, forms the basis for northern Iraqi oil production. Bai Hassan, Jambur, Khabbaz, Saddam, and Ain Zalah-Butmah-Safaia are the other currently-producing oil fields in northern Iraq. An estimated 60% of Northern Oil Company's (NOC) facilities in northern and central Iraq were damaged during the Gulf War. In 2001, output from all northern fields (Kirkuk, Bai Hassan, Jambur, Khabbaz, Saddam, Safiya, and 'Ain Zalah/Butnah) was around 1 million bbl/d. In December 2001, the Turkish Petroleum International Corporation won a U.N.-approved contract to drill for oil in northern Iraq, specifically at the Khurmala field near Kirkuk. Two Russian companies -- Tatneft and Zarubezhneft -- have won U.N. -approved upstream contracts at the Bai Hassan, Kirkuk, and Saddam fields. According to *Petroleum Intelligence Weekly*, Tatneft has U.N.-approved contracts to drill 33 new wells in Iraq. In early December 1999, Russian energy company Zarubezhneft said that it was drilling multiple wells at Kirkuk, and that this did not violate U.N. sanctions (Russian officials have denied that any work was being done). Zarubezhneft hopes to boost Kirkuk production capacity from its current 900,000 bbl/d to around 1.1 million bbl/d.

Iraq's southern fields -- mainly North and South Rumaila, plus al-Zubair (4.5 billion barrels in proven oil reserves), the Missan fields, West Qurna, Luhais, and Bin Umar -- produced around 1.5 million bbl/d in 2001. Zarubezhneft has a contract to drill approximately 100 wells in the North Rumaila field. In January 2002, Tunisia signed a deal with Iraq to develop an oilfield near the southern province of Najaf.

Another major Iraqi oil field is the 11-billion barrel East Baghdad field, which came online in April 1989. This centrally-located field currently produces

50,000 bbl/d of heavy, 23º API oil as well as 30 million cubic feet per day (Mmcf/d) of associated natural gas.

In March 2000, U.N. Security Council agreed to double the spending cap for oil sector spare parts and equipment (under Resolution 1175 of June 20, 1998), allowing Iraq to spend up to $600 million every 6 months repairing oil facilities. U.N. Secretary General Kofi Annan had warned of a possible "major breakdown" in Iraq's oil industry if spare parts and equipment were not forthcoming. In August 2000, a senior Iraqi oil official stated that delays by the United Nations in approving contracts to upgrade Iraq's oil sector were threatening production levels. The United States has said that the $300 million should be used only for short-term improvements to the Iraqi oil industry, and not to make long-term repairs. Iraq's oil sector distribution plan for the "oil-for-food" program's 12th phase reportedly included $350 million for upstream contracts, including development work on the Hamrin, Suba, and West Qurna fields.

As of early January 2002, the head of the U.N. Iraq Program, Benon Sevan, expressed "grave concern" at the volume of "holds" put on contracts for oilfield equipment, and stated that the entire program was threatened with paralysis. According to Sevan, these holds amounted to nearly 2,000 contracts worth about $5 billion, about 80% of which reportedly were "held" by the United States. Overall, Iraq has imported about $1.2 billion worth of equipment to upgrade oil facilities over the past three years under the "oil-for-food" program. Sevan also said that retroactive pricing was resulting in lower Iraqi oil exports, and therefore revenues, under the "oil-for-food" program.

Post-U.N. Sanctions Development Plans

As of October 2002, Iraq reportedly had signed several multi-billion dollar deals with foreign oil companies mainly from China, France, and Russia. Deutsche Bank estimates $38 billion total on new fields -- "greenfield" development -- with potential production capacity of 4.7 million bbl/d if all the deals come to fruition (which Deutsche Bank believes is highly unlikely). Iraq reportedly has become increasingly frustrated at the failure of these

companies actually to begin work on the ground, and has threatened to no longer sign deals unless firms agreed to do so without delay. Iraqi upstream oil contracts generally require that companies start work immediately, but U.N. sanctions overwhelmingly have dissuaded companies from doing so. In 1992, Iraq announced plans to increase its oil production capacity to over 6.3 million bbl/d following the lifting of U.N. sanctions. This plan, which was to be accomplished in three phases over a five-year period, assumed billions of dollars worth of foreign investment. Much of the production was to come from giant fields in the south (Halfaya, Majnoon, Bin Umar, West Qurna), plus the Mishrif reservoir (Luhais, North and South Rumaila, Zubair, etc.), East Baghdad, and others.

During the past year or so, Iraq reportedly has signed a flurry of deals with companies from Italy (Eni), Spain (Repsol YPF), Russia (Tatneft), France (TotalFinaElf), China (CNPC), India, Turkey, and others. According to a report in *The Economist*, Iraq has signed over 30 deals with various oil companies, offering generous rates of return ("on the order of 20%") as part of its "Development and Production Contract" (DPC) model. Iraq introduced the DPC in 2000 to replace the previous "Production Sharing Contract" (PSC) arrangement.

Russia, which is owed billions of dollars by Iraq for past arms deliveries, has a strong interest in Iraqi oil development. This includes a $3.7 billion, 23-year deal to rehabilitate Iraqi oilfields, particularly the 11-15 billion barrel West Qurna field (located west of Basra near the Rumaila field). West Qurna is believed to have production potential of 800,000-1 million bbl/d. In a surprising and somewhat puzzling development, in mid-December 2002 the Iraqi Oil Ministry announced that it was severing its contract with the Lukoil consortium on West Qurna due to "fail[ure] to comply" with contract stipulations. Specifically, the Iraqis cited Lukoil's failure to invest a required $200 million over three years. Two other, smaller, stakes in West Qurna by Russian companies Zarubezhneft and Mashinoimport reportedly were left intact. In addition, three exploration and production deals were signed between Iraq and Russian companies (Soyuzneftegaz, Stroytransgas-Oil, and

Tatneft, to develop the 100,000-bbl/d Rafidain field, the Western Desert's Block 4, and the Western Desert's Block 9, respectively). Despite all this, Russia's Foreign Ministry said that it viewed the Iraqi decision on Lukoil and West Qurna "with regret." In mid-February 2003, following a month of talks between the two sides aimed at reversing Iraq's decision, the Iraqis announced that its decision to cancel the Lukoil deal was "finished and the contract has been scrapped."

Since the West Qurna agreement was originally signed in March 1997, Russia's Lukoil (the operator, with a 68% share, heading a Russian consortium plus an Iraqi company to be selected by the Iraqi government) had prepared a plan to install equipment with capacity to produce 100,000 bbl/d from West Qurna's Mishrif formation. Meanwhile, in August 2000, Iraqi engineers reportedly completed work on two degassing stations at West Qurna, with two more planned, potentially raising production at the field (one of the world's largest) significantly, from around 140,000 bbl/d currently. In October 1999, Russian officials reportedly said that Iraq had accepted a Russian request to delay work on West Qurna given the continuation of U.N. sanctions. This followed an Iraqi warning that Lukoil could lose its contract (and possibly be replaced by another Russian company) at West Qurna if it did not begin work immediately (Lukoil has been restrained from doing so by U.N. sanctions). As of October 2002, however, Lukoil had not begun work on West Qurna. In October 2002, Lukoil's Chief Executive (Vagit Alekperov) stated his belief that the West Qurna contract would "be upheld no matter what happens" in Iraq, and that he had received "guarantees" on this matter from Russian President Vladimir Putin.

In October 2001, a joint Russian-Belarus oil company, Slavneft, signed a $52 million service contract with Iraq on the 2-billion-barrel, Suba-Luhais field in southern Iraq. Full development of Suba-Luhais could result in production of 100,000 bbl/d (35º API) at a cost of $300 million over three years. As of March 2002, Slavneft reportedly was awaiting approval from the United Nations to drill 25 wells as Luhais.

The Saddam field contains 3 billion barrels of oil and 5 trillion cubic feet (Tcf) of associated gas. Iraq is seeking foreign assistance for a second-phase Saddam development, which would raise oil production capacity to 50,000 bbl/d, as well as 300 Mmcf/d of gas. In early April 2001, Russia's Zarubezhneft received U.N. approval to drill 45 wells in the Saddam field, plus Kirkuk and Bai Hassan, as part of an effort to reduce water incursion into the fields.

The largest of Iraq's oilfields slated for post-sanctions development is Majnoon, with reserves of 12-30 billion barrels of 28º-35º API oil, and located 30 miles north of Basra on the Iranian border. French company TotalFinaElf reportedly has signed a deal with Iraq on development rights for Majnoon. Majnoon was reportedly brought onstream (under a "national effort" program begun in 1999) in May 2002 at 50,000 bbl/d, with output possibly reaching 100,000 bbl/d by the end of 2002 (according to former Oil Minister Rashid). Future development on Majnoon ultimately could lead to production of 450,000 bbl/d within two years or so at an estimated (according to Deutsche Bank) cost of $4 billion. Initial output from the field is expected to be around 440,000 bbl/d of 42º API crude, but may reach 500,000 bbl/d with more extensive development. Eventually, Majnoon could produce significantly more oil than that, possibly well above 1 million bbl/d.

In July 2001, angered by France's perceived support for the U.S. "smart sanctions" plan, Iraq announced that it would no longer give French companies priority in awarding oil contracts, and would reconsider existing contracts as well. Iraq also announced that it was inclined to favor Russia, which has been supporting Iraq at the U.N. Security Council, on awarding rights to Majnoon and another large southern oil field, Bin Umar. As of February 2003, Russian company Zarubezhneft reportedly was negotiating a contract to develop Bin Umar. The status of TotalFinaElf, which had previously expressed interest in the field, was not clear. In February 2003, TotalFinaElf said that it was confident regarding its Majnoon contract, regardless of the Iraqi government in power.

The 2.5-5 billion-barrel Halfaya project is the final large field development in southern Iraq. Several companies (BHP, CNPC, Agip) reportedly have shown interest in Halfaya, which ultimately could yield 200,000-300,000 bbl/d in output at a possible cost of $2 billion.

Smaller fields with under 2 billion barrels in reserves also are receiving interest from foreign oil companies. These fields include Nasiriya (Eni, Repsol), Tuba (ONGC, Sonatrach, Pertamina), Ratawi (Shell, Petronas, CanOxy), Gharaf (Mashinoimport, Rosneftegasexport), Amara (PetroVietnam), Noor (Syria), and more. Italy's Eni and Spain's Repsol appear to be strong possibilities to develop Nassiriya.

In addition to the 25 new field projects, Iraq plans to offer foreign oil companies service contracts to apply technology to eight already-producing fields. Meanwhile, Iraq has authorized "risk contracts" to promote exploration in the nine remote Western Desert blocs. Iraq has identified at least 110 prospects from previous seismic work in this region near the Jordanian and Saudi borders. In late 2000, India's ONGC was awarded Block 8 in the Western Desert region, and in April 2002, Indonesia's Pertamina signed an exploration contract for Block 3. Other companies reportedly interested in the Western Desert region include: Repsol, Lundin, Sonatrach, MOL, Petronas, Ranger, and TPAO.

In total, Deutsche Bank estimates that international oil companies in Iraq may have signed deals on new or old fields amounting to nearly 50 billion barrels of reserves, 4 million bbl/d of potential production, and investment potential of more than $20 billion. Development of southern fields may be complicated by infrastructure damage, the presence of land mines (from the Iran-Iraq war), and marshy conditions. Major companies with deals in Iraq include TotalFinaElf, several Russian companies (Lukoil, Zarubezneft, Mashinoimport, Stroytransgas, Stroyexport, Tatneft, etc.), China's National Petroleum Company (CNPC, mainly on the Ahdab field); and Eni/Repsol.

In December 2002, the Council of Foreign Relations and the Baker Institute

released a report on Iraq's oil sector. Among other things, the report concluded that: 1) Iraq's oil sector infrastructure is in bad shape at the moment, being held together by "band-aids," and with a production decline rate of 100,000 bbl/d per year; 2) increasing Iraqi oil production will require "massive repairs and reconstruction...costing several billions of dollars and taking months if not years;" 3) costs of repairing existing oil export installations alone would be around $5 billion, while restoring Iraqi oil production to pre-1990 levels would cost an additional $5 billion, plus $3 billion per year in annual operating costs; 4) outside funds and large-scale investment by international oil companies will be needed; 5) existing oil contracts will need to be clarified and resolved in order to rebuild Iraq's oil industry, with any "prolonged legal conflicts over contracts" possibly "delay[ing] the development of ; and 6) any "sudden or prolonged shut-down" of Iraq's oil industry could result in long-term reservoir damage; 7) Iraq's oil facilities could easily be damaged during any domestic unrest or military operations (in early February 2003, the Patriotic Union of Kurdistan claimed that Iraqi soldiers were mining oil wells in the north of the country in anticipation of war); and 8) given all this, a "bonanza" of oil is not expected in the near future.

In January 2003, U.S. Secretary of State Colin Powell said that Iraq's oil reserves would not be "exploited for the United States' own purpose," but would "be held in trust for the Iraqi people, to benefit the Iraqi people." Also, in late January/early February 2003, the U.S. State Department held meetings with Iraqi opposition figures on the future of Iraq's oil and gas fields in a possible post-Saddam Hussein context. Currently, the United States maintains unilateral economic sanctions against Iraq, including Excutive Order #12722 (August 2, 1990) imposing a complete trade embargo, and Executive Order #12724 (August 9, 1990) imposing additional restrictions. Under U.S. sanctions, goods or services cannot be imported from or exported to Iraq, with the exception of the U.N. "oil-for-food" program. For more details on U.S. sanctions against Iraq, please check with the U.S. Treasury Department's Office of Foreign Assets Controls.

Oil Export Pipelines/Terminals

Iraq's oil export infrastructure (pipelines, ports, pumping stations, etc.) were damaged in both the Iran-Iraq War as well as Operation Desert Storm (1991). Currently, the 600-mile, 40-inch Kirkuk-Ceyhan pipeline is Iraq's largest operable crude export pipeline. This Iraq-Turkey link consists has a fully-operational capacity of 1.1 million bbl/d, but reportedly can handle only around 900,000 bbl/d. A second, parallel, 46-inch line has an optimal capacity of 500,000 bbl/d and was designed to carry Basra Regular exports, but at last report was inoperable. Combined, the two parallel lines have an optimal capacity of 1.5-1.6 million bbl/d. Expanding capacity to this level, however, will depend on Iraq's ability to rehabilitate the IT-1 and IT-1A pumping stations, as well as the Zakho metering station near the Iraq-Turkey border and other ongoing pipeline repairs (including so-called "intelligent pigging") on the 46-inch line. This work appears to be well behind schedule, and reportedly will not be completed anytime soon (although there was at least one report in late May 2002 that the line would be fixed by July). The 40-inch line has additional pumping stations and fewer bottlenecks than the 46-inch line, which allows for greater throughput than that of the larger line. Currently, Iraq is bypassing the crucial but damaged IT-2 pumping station, located about 93 miles south of the Turkish border, making it more difficult to reach the 1.6 million bbl/d dual-line capacity. To make IT-2 operational, Iraqi officials have said that they need controls and associated valves costing around $50 million. The IT-1 pumping station near Kirkuk received lighter damage and is presently functional.

On August 20, 1998, Iraq and Syria (which reopened their border in June 1997 -- after a 17-year closure -- for trade and official visits) signed a memorandum of understanding for the possible reopening of the 50-year-old, rusting Banias oil pipeline from Iraq's northern Kirkuk oil fields to Syria's Mediterranean port of Banias (and Tripoli, Lebanon). As of October 2002, the pipeline reportedly was being used (see above), and there also was talk of building a new, parallel pipeline as a replacement.

In order to optimize export capabilities (i.e., to allow oil shipments to the

north or south), Iraq constructed a reversible, 1.4-million bbl/d "Strategic Pipeline" in 1975. This pipeline consists of two parallel 700,000-bbl/d lines. The North-South system allows for export of northern Kirkuk crude from the Persian Gulf and for southern Rumaila crudes to be shipped through Turkey. During the Gulf War, the Strategic Pipeline was disabled after the K-3 pumping station at Haditha as well as four additional southern pumping stations were destroyed. In early 2001, Iraqi oil ministry officials claimed that the pipeline had been rehabilitated, providing Iraq with increased export flexibility. However, a U.N. assessment team which visited Iraq in March 2001 concluded that the country's downstream sector "had declined seriously in many respects" over the past 18 months, including increased leakage from pipelines, particularly the North-South "Strategic" line.

In the Persian Gulf, Iraq has three tanker terminals: at Mina al-Bakr, Khor al-Amaya, and Khor al-Zubair (which mainly handles dry goods and minimal oil volumes). Iraq also has additional dry goods ports at Basra and at Umm Qasr, which is being outfitted to accommodate crude tankers. Mina al-Bakr is Iraq's largest oil terminal, with four 400,000-bbl/d capacity berths capable of handling very large crude carriers (VLCCs). Gulf War damage to Mina al-Bakr appears to have been repaired in large part and the terminal currently can handle up to 1.2-1.3 million bbl/d. A full return to Mina al-Bakr's nameplate capacity apparently would require extensive infrastructure repairs. Mina al-Bakr also is constrained by a shortage of storage and oil processing facilities, most of which were destroyed in the Gulf War.

Iraq's Khor al-Amaya terminal was heavily damaged during the Iran-Iraq War (and completely destroyed during Operation Desert Storm in 1991) and has been out of commission since then. As of March 2001, reports indicated that Iraq had largely completed repairing two berths at Khor al-Amaya. According to the Iraqi Oil Ministry, the terminal, with export capacity of 500,000-700,000 bbl/d, would "soon be ready to receive oil tankers." Upon full completion of repairs, Iraq projects Khor al-Amaya's capacity will rise to 1.2 million bbl/d, and will help prevent delays at Mina al-Bakr while repairs are conducted there. In March 2002, *Platt's Oilgram News* reported that a Russian

company was "awaiting the green light from the U.N...to help restore Iraq's Mina al-Bakr and Khor al-Amaya crude loading platforms." Iraq will need U.N. Security Council approval to export from Khor al-Amaya, since it is not part of the approved export outlet of Mina al-Bakr.

Refining

Iraq's refining capacity as of January 2003 was believed to be over 417,000 bbl/d, compared to a pre-Gulf War, nameplate capacity of 700,000 bbl/d. Iraq has 10 refineries and topping units. The largest are the 150,000-bbl/d Baiji North, 140,000-bbl/d (or higher) Basra, and 100,000-bbl/d Daura plants. During the Gulf War, both Baiji in northern Iraq as well as the refineries at Basra, Daura, and Nasiriyah were severely damaged. Today, a lack of light-end products, low quality gasoline, and rising pollution levels because of a lack of water treatment facilities are some problems faced by Iraq's refining sector. Post-sanction plans include attracting foreign investment to perform refinery upgrades (Iraq has identified dozens of such projects) and to build a new $1-billion, 290,000-bbl/d "Central" refinery near Babylon.

NATURAL GAS

Iraq contains 110 trillion cubic feet (Tcf) of proven natural gas reserves, along with roughly 150 Tcf in probable reserves. About 70% of Iraq's natural gas reserves are associated (i.e., natural gas produced in conjunction with oil), with the rest made up of non-associated gas (20%) and dome gas (10%). Until 1990, all of Iraq's natural gas production was from associated fields. In 2001, Iraq produced 97 billion cubic feet (Bcf) of natural gas, down drastically from peak output levels of 700 Bcf in 1979. Iraq plans to increase its natural gas output in order to reduce dependence on oil consumption.

Within two years after the lifting of U.N. sanctions, Iraq hopes to produce 550 Bcf, and within a decade, Iraq aims to be producing about 4.2 Tcf of natural gas annually. Since most of Iraq's natural gas is associated with oil, progress on increasing the country's oil output will directly affect the gas sector as well. Associated gas often is simply flared off. Significant volumes of gas also are used for power generation and reinjection for enhanced oil recovery

efforts.

Generally, Iraq's policy in recent years has been to award gas and oil concessions to companies from countries supporting the easing or lifting of U.N. sanctions (i.e., France, China, Russia). Russian companies reportedly are hoping to develop a number of natural gas production and processing facilities in Iraq, including a group of fields in the Misan region of southern Iraq.

Main sources of associated natural gas are the Kirkuk, Ain Zalah, Butma, and Bai Hassan oil fields in northern Iraq, as well as the North and South Rumaila and Zubair fields in the south. The Southern Area Gas Project was completed in 1985, but was not brought online until February 1990. It has nine gathering stations and a larger processing capacity of 1.5 billion cubic feet per day. Natural gas gathered from the North and South Rumaila and Zubair fields is carried via pipeline to a 575-Mmcf/d natural gas liquids (NGL) fractionation plant in Zubair and a 100-Mmcf/d processing plant in Basra. At Khor al-Zubair, a 17.5-million-cubic-foot LPG storage tank farm and loading terminals were added to the southern gas system in 1990. Natural gas also used to be pumped from Rumaila into northern Kuwait via a 40-inch, 105-mile pipeline. The gas was used to supply Kuwaiti power stations and LPG plants, but was halted following Iraq's invasion of Kuwait in August 1990.

Iraq's only non-associated natural gas production is from the al-Anfal field (200 Mmcf/d of output) in northern Iraq. Al-Anfal production, which began in May 1990, is piped to the Jambur gas processing station near the Kirkuk field, located 20 miles away. Al-Anfal's gas resources are estimated at 4.5 Tcf, of which 1.8 Tcf is proven. In December 2001, Russia's Gazprom reportedly was negotiating possible development of al-Anfal. In November 2001, a large non-associated natural gas field reportedly was discovered in the Akas region of western Iraq, near the border with Syria, and containing an estimated 2.1 Tcf of natural gas reserves. It is not clear whether or not the field is associated or non-associated.

Besides al-Anfal, Iraq has four large non-associated natural gas fields (Chemchamal, Jaria Pika, Khashm al Ahmar, Mansuriya) located in Kirkuk and Diyala provinces. In February 2000, Iraq's Oil Ministry named Agip and Gaz de France as leaders on a $2.3 billion PSA (production sharing agreement) project to develop these fields, which reportedly have total recoverable reserves of more than 10 Tcf.

Currently, Iraq has a major natural gas pipeline with the capacity to supply around 240 MMcf/d to Baghdad from the West Qurna field. The 48-inch line was commissioned in November 1988, with phases II and III of the project never completed due to war and sanctions. The last two phases of the pipeline project were meant to supply Turkey. Iraq's Northern Gas System, which came online in 1983, was damaged during the Gulf War as well as by the Kurdish rebellion of March 1991. The system supplied LPG to Baghdad and other Iraqi cities, as well as dry gas and sulphur to power stations and industrial plants. Iraq also has a Southern Gas System, which came online in 1985.

ELECTRIC POWER

Around 85%-90% of Iraq's national power grid (and 20 power stations) was damaged or destroyed in the Gulf War. Existing generating capacity of 9,000 megawatts (MW) in December 1990 was reduced to only 340 MW by March 1991. In early 1991, transmission and distribution infrastructure also was destroyed, including the 10 substations serving Baghdad and about 30% of the country's 400-kilovolt (kV) transmission network. In early 1992, Iraq stated that it had restarted 75% of the national grid, including the 1,320-MW Baiji and Mosul thermal plants as well as the Saddam Dam. In 1998, Iraq's maximum available electric generation capacity was estimated (by Iraq) at around 4,000 MW, while the U.N. Iraq Program estimated in November 2002 that generating capacity was 4,300-4,400 MW. The U.N. Iraq Program further stated that, by the summer of 2004, Iraq's generating capacity could reach 5,900 MW, with several power stations (Al-Quds, Beji, Himreen,Yousfiya, Rumaila -- all gas-fired) under construction and several others (Dibs, Hart, Najaf, Nassriya -- gas and thermal) awaiting approval and/or funds.

According to a report by U.N. Secretary General Kofi Annan, Iraq's power deficit stood at 1,800 MW as of August 2000, with blackouts a common occurrence. Iraq reportedly has signed contracts for renovating two generation units at the Harithah power plant, and another to rebuild the Yusufiyah plant, which stopped operating in 1990. Iraq's Electricity Authority reportedly also has signed several other contracts with Chinese, Swiss, French, and Russian companies, to build 3,000 MW of additional power generating capacity. These contracts require U.N. approval, and Iraq has claimed that the United States and Britain are blocking $1.5 billion worth of electrical equipment it has requested. In December 2000, it was reported that a Chinese company had completed work on the Abdullah power plant north of Baghdad. In October 2001, it was reported that Russia's Mosenergomontazh was working to modernize Iraq's Southern Heat and Power Plant in Najibia, Basra province. The project aims to add 200 MW of generating capacity to Iraq's grid. In August 2002, the Najaf governate in southern Iraq announced that two new power plants, with a combined capacity of 20 MW, had come online.

Sources for this report include: Agence France Presse; Associated Press; BBC Summary of World Broadcasts; Business Week; Chicago Tribune; CIA World Factbook 2002; Deutsche Bank; Dow Jones; The Economist; Economist Intelligence Unit; Energy Compass; Financial Times; Global Insight; Gulf News; Hart's Africa Oil and Gas; Interfax News Agency; Janet Matthews Information Services (Quest Economic Database); Los Angeles Times; Middle East Economic Survey; New York Times; Oil & Gas Journal; Oil Daily; Petroleum Economist; Petroleum Intelligence Weekly; Platt's Oilgram News; Reuters News Wire; Russian Oil and Gas Report; U.N. Office of the Iraq Programme; U.S. Energy Information Administration; U.S. Department of State; Wall Street Journal Europe; Washington Post; Weekly Petroleum Argus; World Markets Energy.

COUNTRY OVERVIEW

Head of Government: Saddam Hussein al-Takriti

Deputy Prime Minister: Tariq 'Aziz
Independence: October 3, 1932
Population (2002E): 23 million
Location/Size: Middle East/168,709 square miles, slightly more than twice the size of Idaho.
Major Cities: Baghdad (capital), Basra, Mosul, Karbala, Kirkuk
Languages: Arabic, Kurdish
Ethnic Groups: Arab 75-80%, Kurdish 15-20%, Turkmen, Assyrian, or other 5%
Religions: 97% Muslim (Shi'a 60-65%, Sunni 32-37%), Christian or other (3%)
Defense (2001E): Army (375,000); Air Force (30,000); Navy (2,000). Iraq is believed to have 2,200 main battle tanks and over 300 combat aircraft (of which as few as 100 may be serviceable); Paramilitary Forces (42,000-44,000, including Security Troops, Border Guards, and "Saddam's Fedayeen")

ECONOMIC OVERVIEW

Currency: Iraqi Dinar (ID)
Unofficial Exchange Rate (12/02E): US$1 = ID1,281 (note: the official rate is US$1 = ID 0.3)
Gross Domestic Product (at market exchange rates) (2002E): $28.6 billion
Gross Domestic Product (at purchasing power parity rates) (2002E): $15.5 billion (around one-third of 1989's economic output)
Real GDP Growth Rate (Global Insight: Base Case Scenario) (2002E): (-3.0%)-1.5% **(2003F):** (-1.5%)-1.9% **(2004F):** 6.7%
Inflation Rate (Global Insight: Base Case Scenario) (consumer prices) (2002E): 24.6% **(2003F):** 17.6% **(2004F):** 11.0%
Major Export Products (2002): Crude oil and oil products (regulated by the United Nations)
Major Import Products (2002): Food, medicine, consumer goods (regulated by the United Nations)
Merchandise Exports (2002E): $13.0 billion
Merchandise Imports (2002E): $7.8 billion
Merchandise Trade Balance (2002E): $5.2 billion

Current Account Balance (2002E): $2.3 billion
Oil Export Revenues (2002E): $12.3 billion (includes $3 billion or so in smuggling)
Oil Export Revenues/Total Export Revenues (2002E): 95% or more
External Debt (2003E): estimates range from over $100 billion to more than $200 billion

ENERGY OVERVIEW

Minister of Oil: Samir Abdul Aziz al-Najm (since January 2003
Proven Oil Reserves (1/1/03E): 112.5 billion barrels (around 75 billion barrels of which has not yet been developed; "probable" and "possible" reserves are as high as 220 billion barrels)
Oil Production (January-November 2002E): 2.02 million barrels per day (bbl/d), of which 1.99 million bbl/d is crude oil (note: Iraqi oil production was 2.45 million bbl/d in 2001)
Oil Production Capacity, Maximum Sustainable (2/03E): 2.8-2.9 million bbl/d (declining by about 100,000 bbl/d per year)
Oil Export Routes: Kirkuk-Ceyhan pipeline; Mina al-Bakr port; to Jordan and Turkey via truck; reportedly to Syria via the Kirkuk-Banias pipeline; smuggling by boat along the Gulf coast
Oil Consumption (2002E): 460,000 barrels per day (bbl/d)
Net Oil Exports (January-November 2002E): 1.56 million bbl/d
U.S. Oil Imports from Iraq (January - November 2002E): 449,000 bbl/d (down from 795,000 bbl/d during 2001)
Crude Oil Refining Capacity (1/1/03E): 417,500 bbl/d (according to the *Oil and Gas Journal*)
Natural Gas Reserves (1/1/03E): 109.8 trillion cubic feet (Tcf)
Natural Gas Production/Consumption (2001E): 97 billion cubic feet (Bcf)
Electricity Generation Capacity (2002E): 4.3-4.4 gigawatts (90% thermal)
Electricity Production (2001E): 36.0 billion kilowatthours

ENVIRONMENTAL OVERVIEW

Total Energy Consumption (2000E): 1.09 quadrillion Btu* (0.3% of world total energy consumption)

Energy-Related Carbon Emissions (2000E): 20.2 million metric tons of carbon (0.3% of world total carbon emissions)
Per Capita Energy Consumption (2000E): 47.4 million Btu (vs U.S. value of 352.9 million Btu)
Per Capita Carbon Emissions (2000E): 0.88 metric tons of carbon (vs U.S. value of 5.6 metric tons of carbon)
Energy Intensity (1999E): 14,895 Btu/ $1995 (vs U.S. value of 11,138 Btu/ $1995)**
Carbon Intensity (1999E): 0.28 metric tons of carbon/thousand $1995 (vs U.S. value of 0.18 metric tons/thousand $1995)**
Fuel Share of Energy Consumption (2000E): Oil (88.8%), Natural Gas (10.7%); Hydroelectric (0.5%)
Fuel Share of Carbon Emissions (2000E): Oil (89.4%), Natural Gas (10.6%)
Number of People per Motor Vehicle (1998): 17.8 (vs U.S. value of 1.3)
Status in Climate Change Negotiations: Iraq is not a signatory to the United Nations Framework Convention on Climate Change or to the Kyoto Protocol.
Major Environmental Issues: Government water control projects have drained most of the inhabited marsh areas east of An Nasiriyah by drying up or diverting the feeder streams and rivers; a once sizable population of Shi'a Muslims, who have inhabited these areas for thousands of years, has been displaced; furthermore, the destruction of the natural habitat poses serious threats to the area's wildlife populations; inadequate supplies of potable water; development of Tigris-Euphrates Rivers system contingent upon agreements with upstream riparian Turkey; air and water pollution; soil degradation (salination) and erosion; desertification.
Major International Environmental Agreements: A party to the Law of the Sea and the Nuclear Test Ban. Has signed, but not ratified, Environmental Modification.

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power.

**GDP based on EIA International Energy Annual 2000

OIL AND GAS INDUSTRY

Major Companies: The Oil Ministry oversees the nationalized oil industry through the *Iraq National Oil Company* (INOC). Autonomous companies under INOC include the *State Company for Oil Projects* (SCOP) - design and engineering of upstream and downstream projects; *Oil Exploration Company* (OEC) - exploration; *Northern Oil Company* (NOC) and *Southern Oil Company* (SOC) - upstream activities in northern/central and southern Iraq, respectively; *State Organization for Oil Marketing* (SOMO) - crude oil sales and OPEC relations; *Iraqi Oil Tankers Company* (IOTC); and various departments within the Ministry of Oil which run Iraq's internal pipeline systems, distribute oil products, operate downstream natural gas/LPG projects and gas bottling plants. In August 2001, Iraqi oil minister Rashid announced that a new state oil company ("Oil Projects Company") would be created to oversee development of new Iraqi discoveries.

Major Oil Fields (proven reserves - billion barrels, 2002E): Majnoon (12-30), West Qurna (11.3-15.0), East Baghdad (11+), Kirkuk (10+), Rumaila (10+), Bin Umar (6+), Rattawi (3.1), Halfaya (2.5-4.6), Nassiriya (2-2.6), Suba-Luhais (2.2), Tuba (1.5), Khurmala (1.0), Gharaf (1.0-1.1), Rafidain (0.7), Amara (0.5)

Oil Refineries (crude refining capacity bbl/d, 2003E): Baiji (150,000), Basra (140,000), Daura (100,000), Khanakin (12,000), Haditha (7,000), Muftiah (4,500), Qayarah Mosul (2,000)

Major Ports: Mina al-Bakr (1.2 million bbl/d current capacity), Khor al-Amaya, Khor al- Zubair, Umm Qasr

Major Pipelines (current capacity): *Kirkuk-Ceyhan (Dortyol) Pipeline* - 0.9 million bbl/d (optimal capacity on the two lines to Ceyhan is potentially around 1.5-1.6 million bbl/d); *Iraq-Saudi Arabia Pipeline* (IPSA1, 2) - possibly 1.65 million bbl/d (closed by Saudi Arabia in 1990); *Banias/Tripoli Pipeline* - possibly 0.3 million bbl/d (closed by Syria in 1982); *Iraq Strategic Pipeline* - less than 1.4 million bbl/d (reversible, internal transportation only)

LINKS

For more information on Iraq, see these other sources on the EIA web site:
Iraq Chronology: 1980-2002
EIA - Country Information on Iraq

Links to other U.S. government sites:
2002 CIA World Factbook - Iraq
U.S. Office of Foreign Assests Control (for information on Iraqi Sanctions)
U.S. State Department's Consular Information Sheet - Iraq
Library of Congress -- Iraq Country Study

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UN Office of the Iraq Program U.N. Security Council Resolutions Relating to Iraq
Permanent Mission of Iraq to the United Nations
MENA Petroleum Bulletin
University of Texas at Austin -- Iraq Page
University of Pennsylvania -- Middle East Center
Planet Arabia.com
AME Info Middle East Business Information

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